



Frontiers of Potassium

an International Conference

ROME
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POTASSIUM AND CROP QUALITY

During the upcoming Frontiers of Potassium Science conference, the benefits of a sufficient potassium (K) supply for the production of high-quality crops will be discussed (kfrontiers.org).

Potassium plays a vital role for supporting the quality of agricultural products. Although the term "quality" can have many definitions, K is intricately involved with many plant processes that determine the quality of the final harvest. When K is in short supply, photosynthesis, respiration, sugar translocation, and numerous enzymes are impaired.

Defining and measuring crop quality is dependent on the specific crop, the harvested part of the plant, and the intended use of the harvested material. By comparing the harvested products from plants with an adequate K supply with that harvested from plants that are lacking K, measurements of crop quality are determined.

Many studies have documented the positive effect of proper K nutrition on crop quality. It is well known that proper K fertilization also supports high crop yields, improves pest and disease resistance, and results in better appearance, taste, nutrition, and flavor. A few examples of how proper K fertilization improves crop quality are given here:



▶ **Bananas:** A poor K supply results in smaller fruit growing on thin and fragile bunches, with a shorter shelf life in the market.

▶ **Citrus:** Proper K nutrition enhances yields and improves fruit color. It also increases the concentration of vitamin C in the fruit. Additionally, fruit rot is reduced during storage and on the supermarket shelf.

▶ **Apples:** Adequate K improves the shelf life of apples by reducing cell breakdown during storage. Fruit color, flavor, and texture are also boosted by proper K fertilization.



▶ **Pineapple:** Removing K deficiency will improve the fruit size, color, acidity, sugar content, and overall market appeal.

▶ **Tomatoes:** The development of red colored fruit is due to various internal pigments (especially lycopene) that depend on K. The concentration of health-promoting lycopene in the fruit increases with sufficient K uptake.

▶ **Potatoes:** Providing sufficient K improves potato storage properties and helps reduce bruising damage that occurs during handling and transportation. Adequate K also results in potatoes that produce uniform light-colored chips by reducing chemical compounds that darken the chip during cooking.

▶ **Alfalfa:** This important animal feed can be harvested more frequently with proper K fertilization. Alfalfa is able to regrow more quickly after mowing, persist for more years, and withstand winter freezing better with adequate K nutrition.

▶ **Cotton:** Properly using K fertilizer increases the boll size, improves micronaire (fiber fineness), fiber strength and length, which results in superior fabrics. Some cotton diseases are reduced by adequate K nutrition.



These few examples illustrate how proper K fertilizer use and balanced plant nutrition result in improved plant quality. The many benefits of K fertilization are too frequently overlooked, but will be further discussed during the Frontiers of Potassium conference.



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